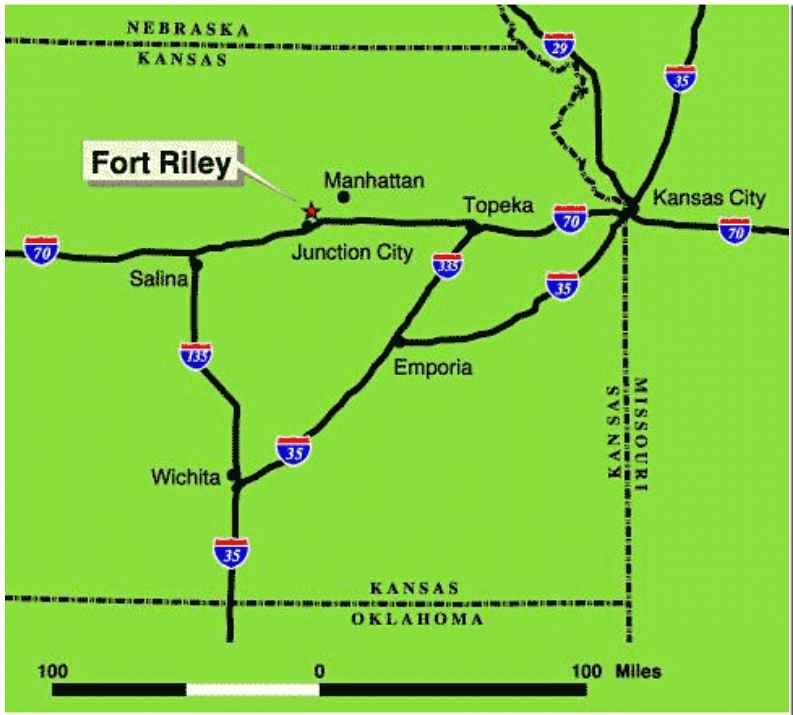
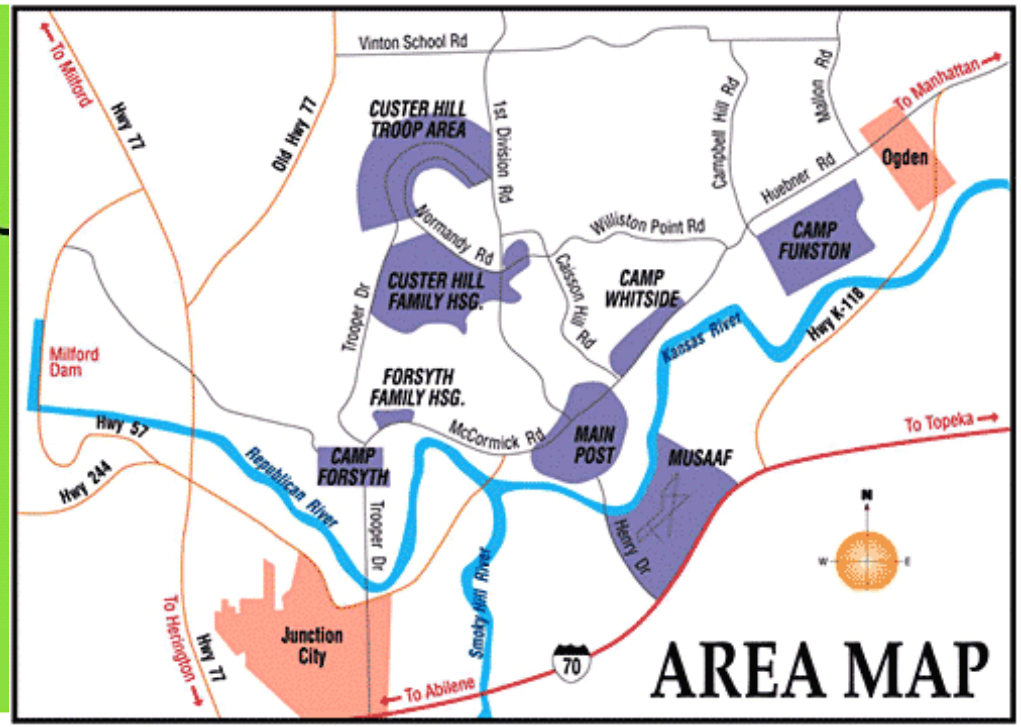
Energy Technologies Workshop

Ft Riley Energy Program Successes / Issues





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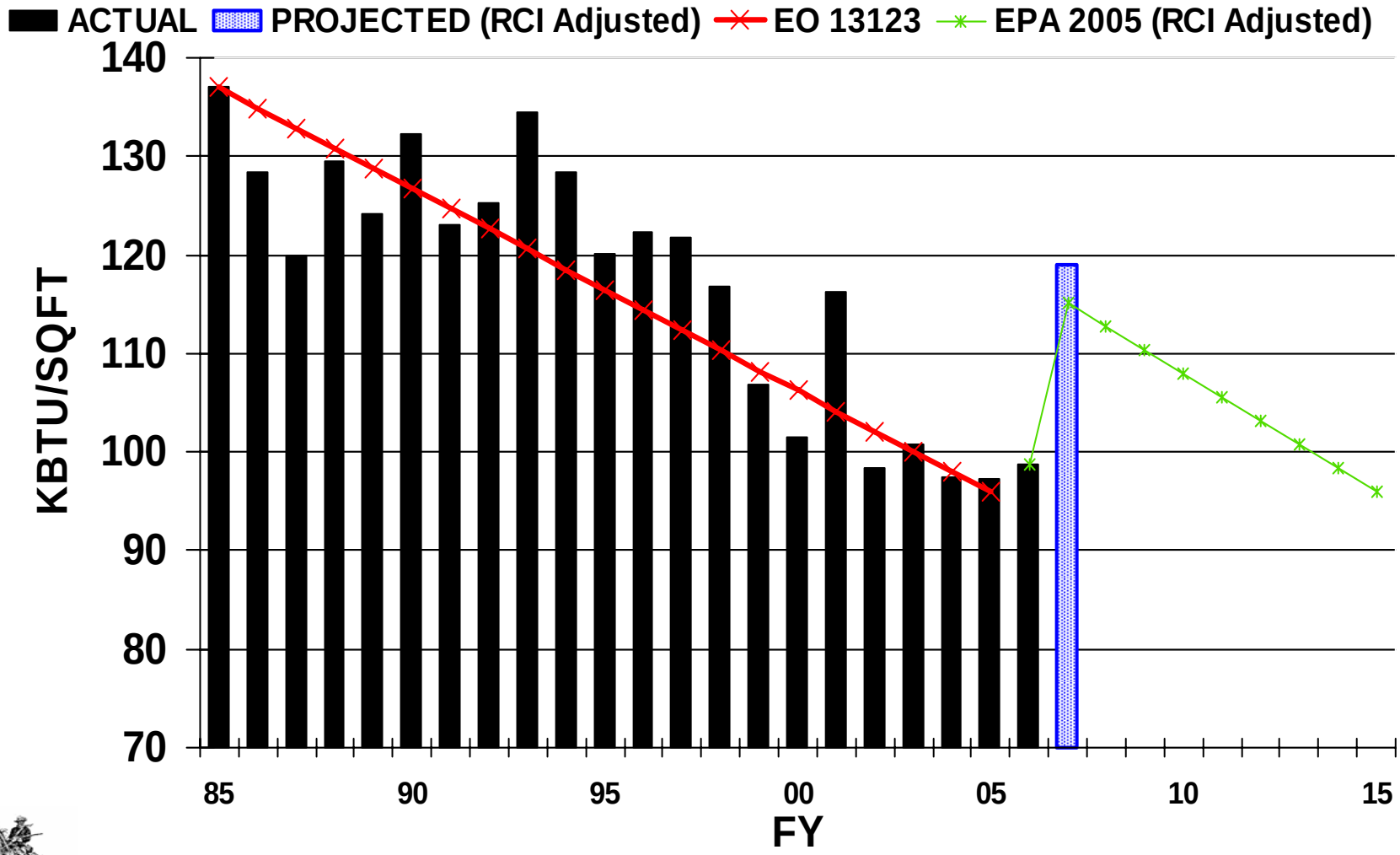
Energy Usage Glidepath



Duty First

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Ft Riley Successes / Issues

- Successes
  - Eliminate underground heat distribution
  - BPA Project
- Issues
  - Build ASHRAE 90.1-30% into PA
    - GSHP consideration for new construction
  - Eliminate excess exterior lighting from standard designs
  - Standardize design temp guidance

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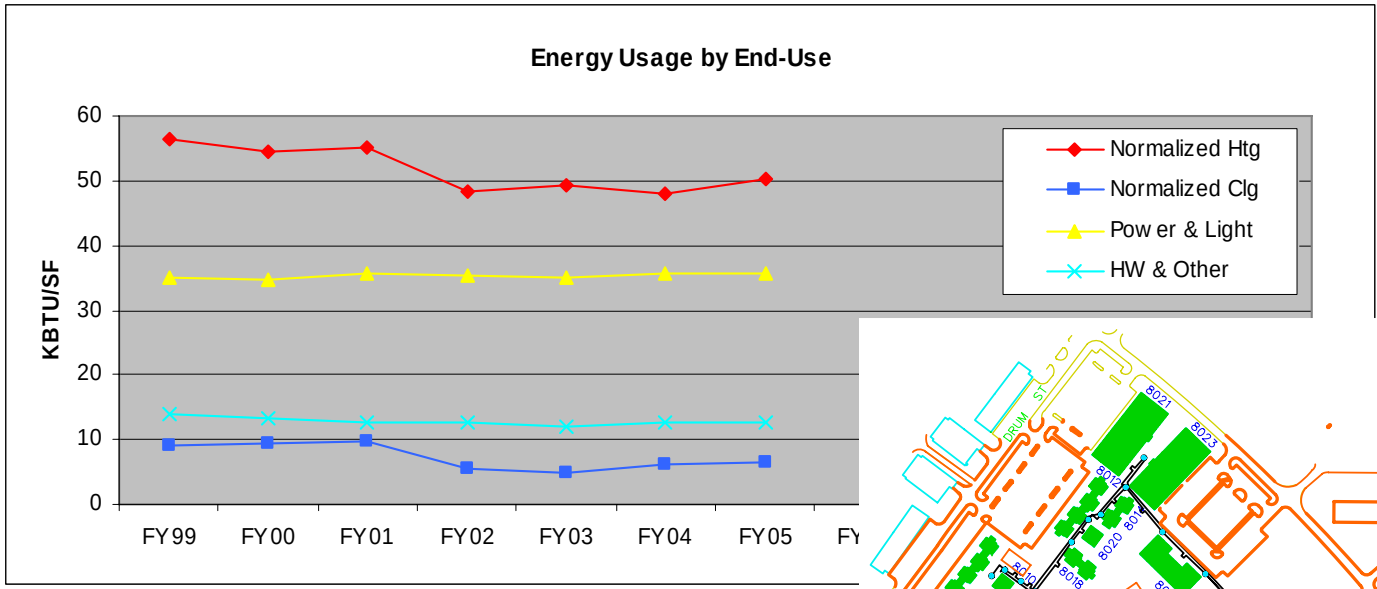
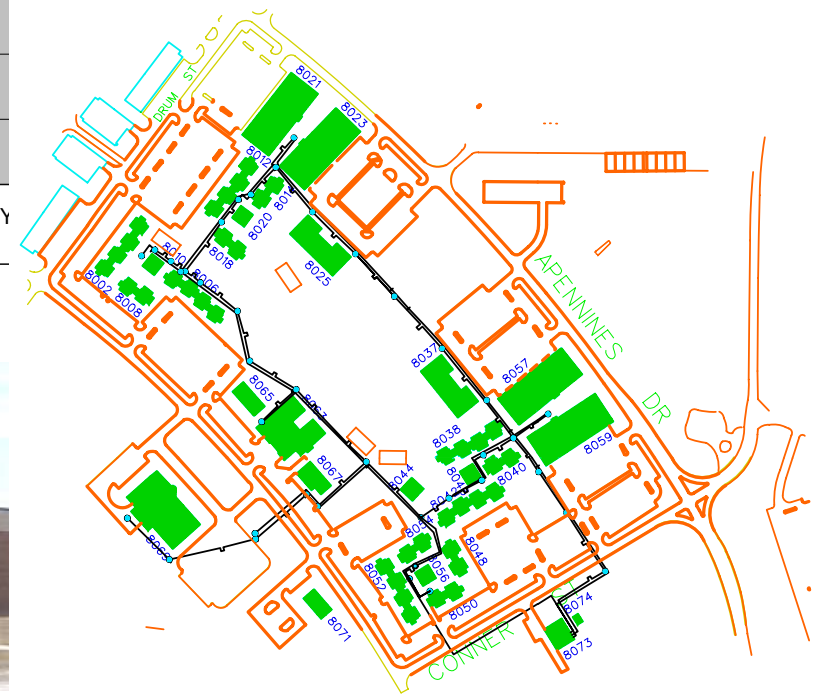
Ft Riley Success #1





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Ft Riley Success #1

Heating Plant Decentralization

Economics

	Construction Cost (less SIOH & cont)	Maintenance Cost (annual)	Energy Cost (annual)	Discounted Payback
Pre-retrofit	*	$116,500	$350,608	
Decentralized	$2,959,198**	$133,000	$144,947	3 years

* Replacement of failing distribution system, boilers, and chillers = $3.2M

** Includes cost of gas piping system, modular boilers, and new chillers.

Ft Riley Success #2

- Ft Riley signed an interagency agreement w/ BPA in FY04 to obtain 3rd party financing through BPA to execute energy projects.
- Strategy:
  - We develop energy project(s) w/ costs/savings.
  - We sign an Interagency agreement with BPA specifying payment stream.
  - BPA obtains financier and sets up financing for agency to be used to execute project(s).
  - We make annual payments to repay financing from utility bill savings.

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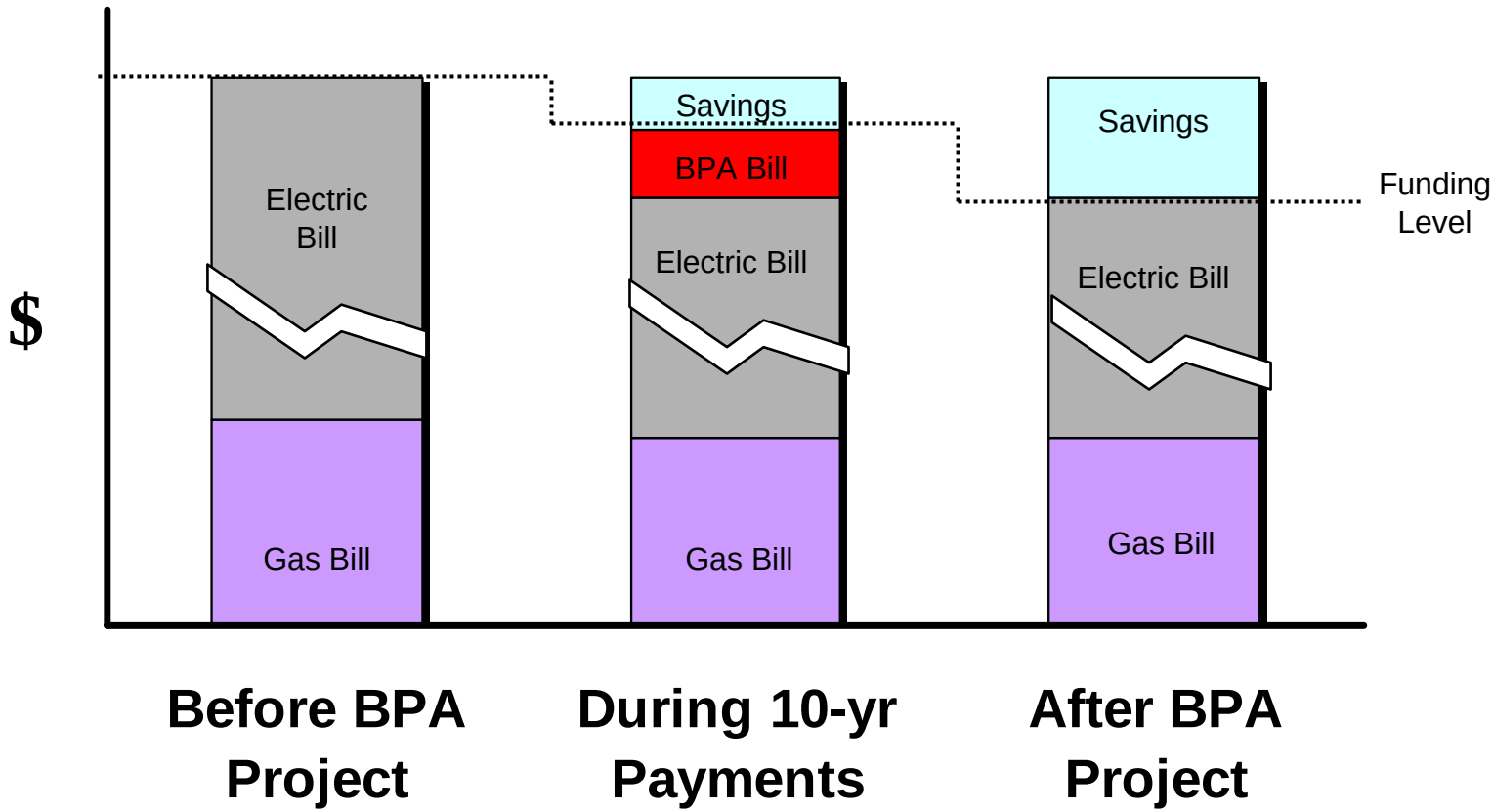
Ft Riley Success #2



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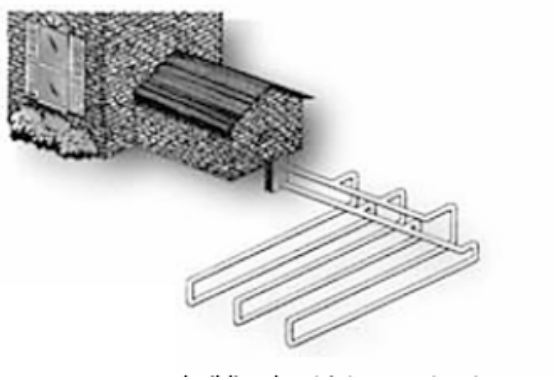
Ft Riley Success #2

BPA Financed Projects	Cost		Savings	
Lighting Retrofit	$ 167k		$ 45k / yr	
HVAC Controls Replacement	$ 146k		$ 18k / yr	
Metering	$ 38k		$ 0	
Ballfield Lighting Controls	$ 29k		$ 5k / yr	
In-house costs	$ 19k			
Finance Costs / Fees	$ 14k			
Total Amount Financed	$ 413k		$ 68k / yr	
Annual Payment for 10 years	$ 52k	From	$ 68k / yr	savings.

Ft Riley Issue #1



- Enforce EPAct 2005 requirement for 30% < ASHRAE 90.1
  - Recent MCA design/builders have resisted
  - Not built into PA
- Ground Source Heat Pumps
  - COE / Design/Builders will not even consider.

Ft Riley Issue #2

Eliminate excess outside lighting on buildings

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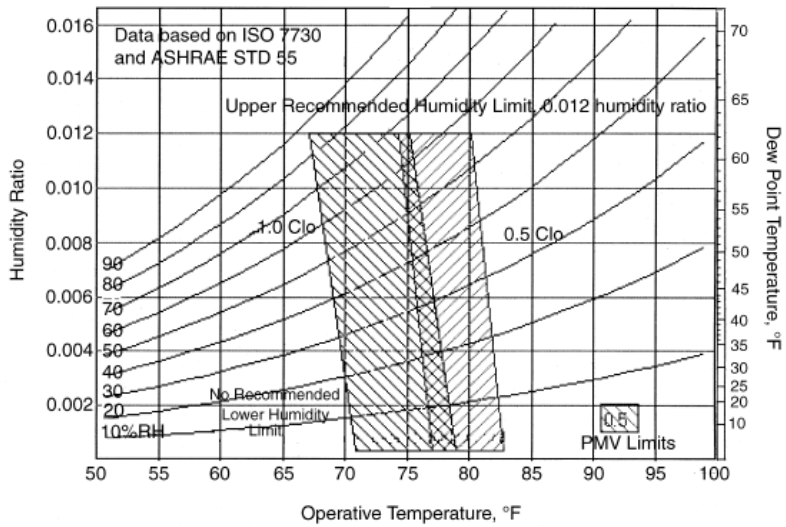
Ft Riley Issue #3

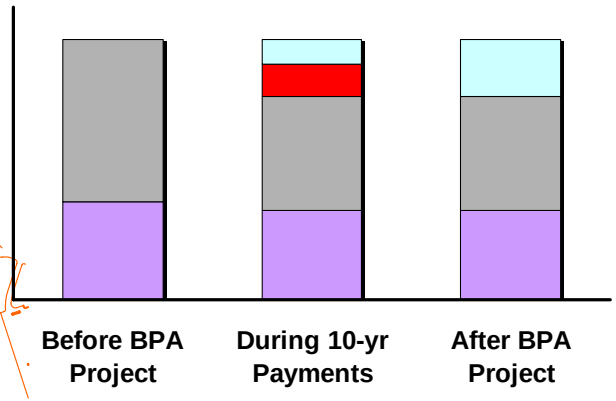
- Conflicting design temp guidance
  - UFC 3-410-01FA
    - 75-78°F for cooling
    - 68°F for heating
  - ASHRAE 55 (referenced)
    - 68°F below acceptable range
  - Interim Policy Guidance
    - 74°F ±2° for cooling
    - 72°F ±2° for heating

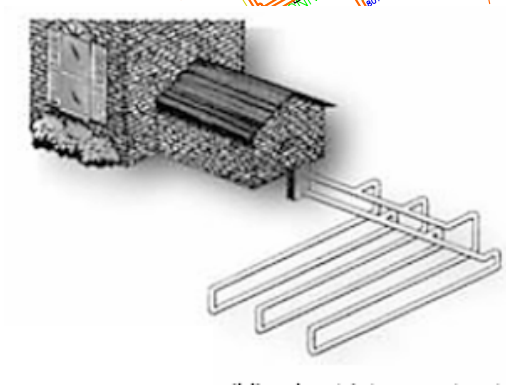


- Changes baseline for 90.1 Energy Cost Budget

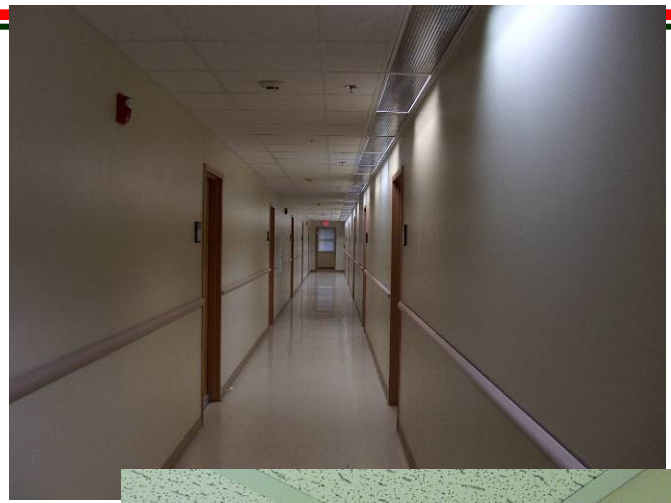
Ft Riley Successes / Issues

Questions?





Ft Riley Facilities

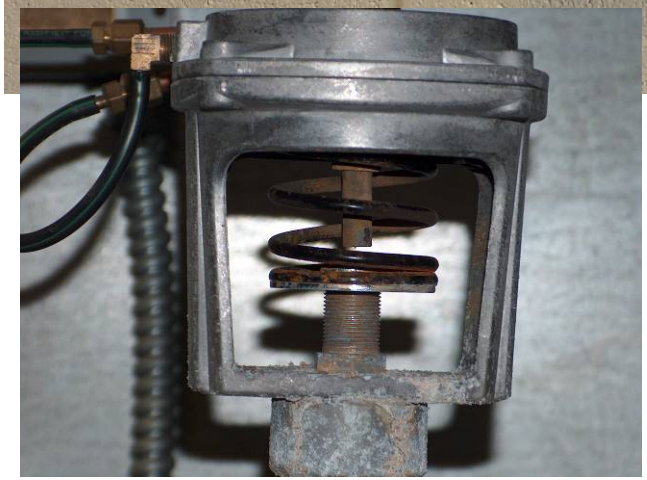


New Barracks - Good ……..……and Bad

Lighting Retrofit

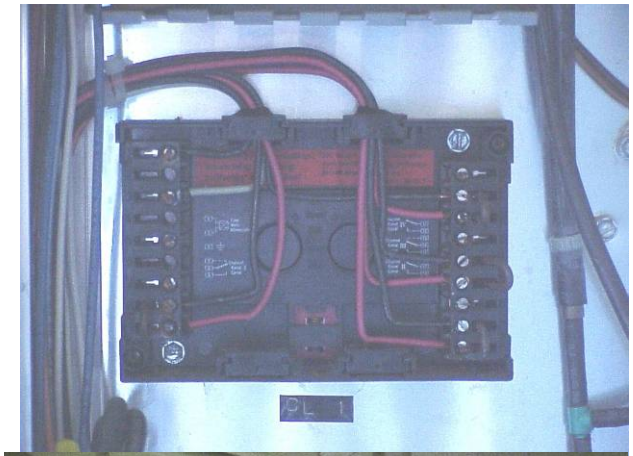
- Convert metal halide to T5 fluorescent; T12->T8
- T5 - Light level = ▲50% ; Energy Use = ▼ 42%

HVAC Controls Upgrade

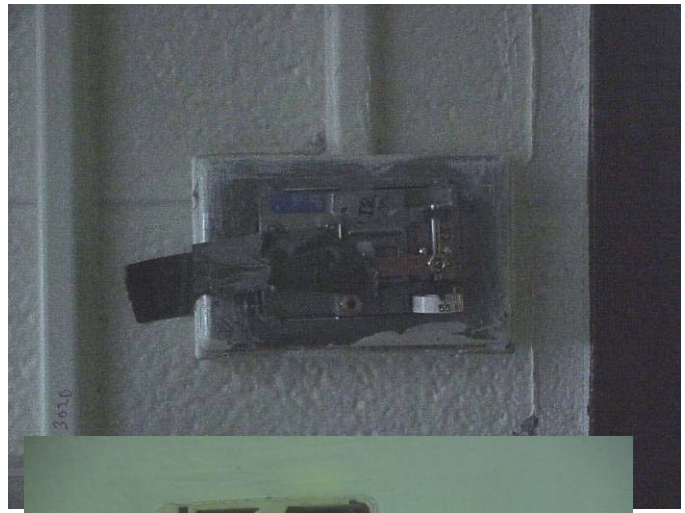


Convert old (broken) pneumatic to DDC

HVAC Controls Upgrade



Time clock?



Thermostats?

Control Valve?

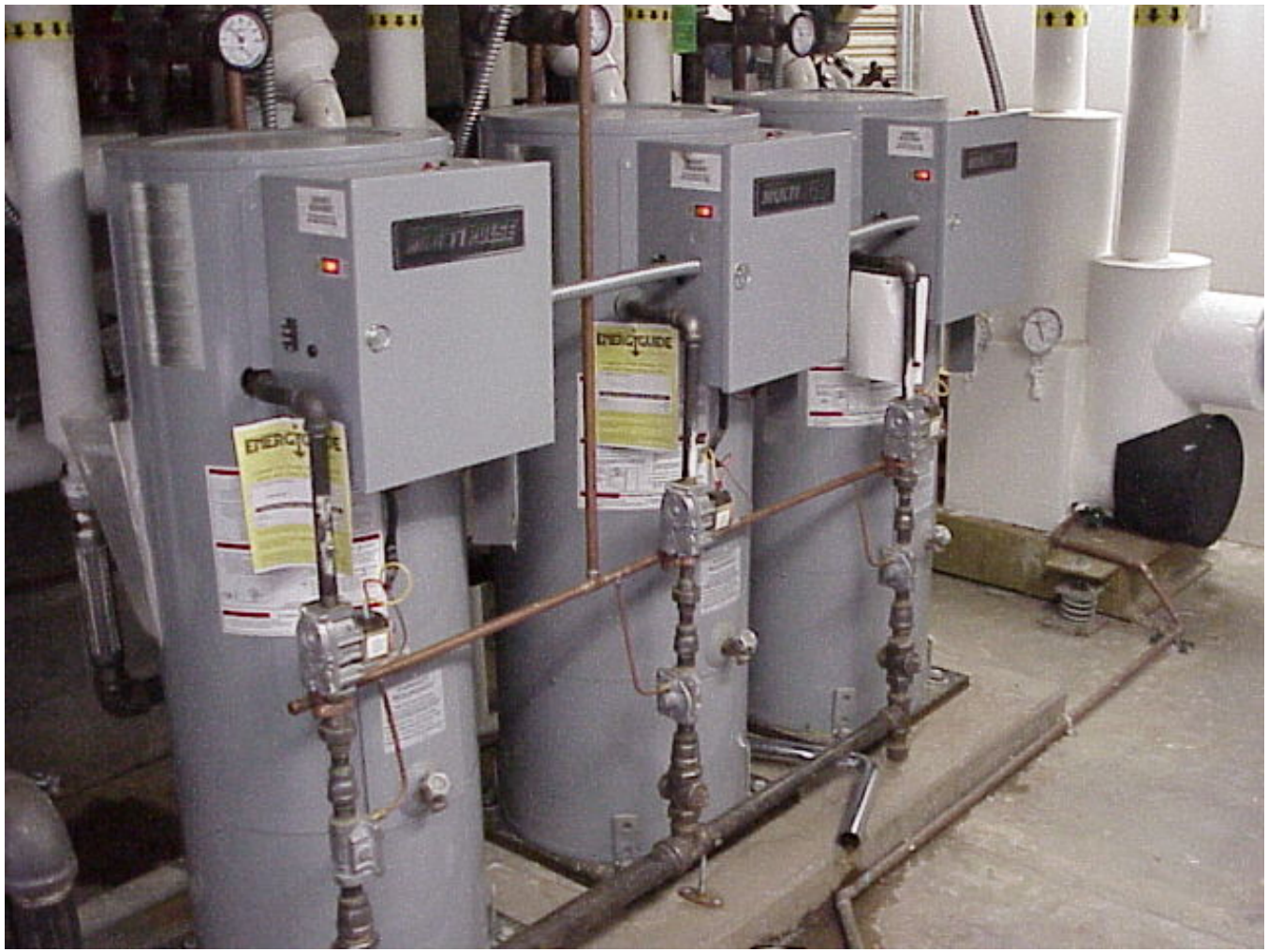
Convert old (broken) pneumatic to DDC

Ball Field Lighting Controls

Frequently left on after morning PT

Heating Plant Decentralization

Modular Boilers



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Heating Plant Decentralization

Pre-1999 Heating/Cooling

Central Plant

2 ea. 500 HP, gas-fired, 100-psig steam boilers

2 ea. 440-ton single-effect steam Li-Br absorption chillers

10,000 LF Steam Distribution System and Chilled Water Distribution System

Heating Plant Decentralization

Energy Comparison

	DHW (mbtu)	Space Htg (mbtu)	Ground loss (mbtu)	Cool (mbtu)	Total MBTU	Cost
Pre-1999	6316	22963	35040	23333	87652	$350,608
Decentralized	4737	21528	0	2089	28353	$144,947
				Δ	**59299**	**$205,661**